

Part 2 -- Remarks

This Amendment and Response is responsive to the office action mailed April 17, 2003. In that office action, claims 1-2 and 8-10 were rejected under 35 U.S.C. 102(b) as anticipated by U.S. Patent 3,914,708 to Stover et al.; and claims 3-7 were rejected under 35 U.S.C. 103(a) as being unpatentable over Stover et al. in view of Sze.

Reconsideration of these rejections is respectfully requested, with respect to the pending claims 1, 3, and 5-7.

Pending Claims

Independent claim 8 has been canceled along with dependent claims 2, 4, 9 and 10. Claims 1, 3 and 5-7 are now pending.

Anticipated Rejection

Reconsideration of the rejection of amended claim 1 under 35 USC 102(b) as being anticipated by Stover (3,914,708) is respectfully requested.

Claim 1 requires a non-uniform dopant concentration profile that continuously increases with increasing depth. Claim 1 also requires that this increasing dopant concentration causes the varactor to have an approximately linear capacitance/voltage response characteristic.

While Stover appears to disclose an approximately linear capacitance/voltage response as part of the capacitance/voltage response characteristic, this linearity is caused by sharply decreasing impurity concentration level, column 7, lines 1-5.

As Stover shows in Fig. 3, the dopant concentration profile increases through two regions 32, and 46, but neither of these regions cause the linear capacitance/voltage response. It is the decreasing impurity concentration level region 38 that causes the linear response shown in Fig. 4b in Stover, not the increasing impurity concentration level as is required by claim 1 of the present application.

Accordingly, claim 1 recites subject matter that does not appear to be disclosed by Stover, and therefore can not be anticipated by Stover.

Obviousness Rejections

Reconsideration of the rejection of amended claim 3, and 5-7 under 35 USC 103(a) as being obvious under Stover et al. in view of Sze. is respectfully requested.

Neither Stover or Sze appear to recognize the value of increasing the dopant concentration with depth. Sze shows decreasing the dopant concentration with depth when $m < 0$ or a uniform concentration with depth when $m = 0$ or 1. Stover uses a decreasing dopant concentration with depth to obtain a linear response characteristic. The benefit of increasing dopant concentration with depth is that it gives an approximately linear capacitance/voltage response characteristic where the capacitance changes slightly with relatively large voltage changes.

Since Sze and Stover both use a decreasing dopant concentration with depth and neither appear to suggest or recognize the benefit of increasing dopant concentration with depth, the combination of Sze and Stover cannot suggest using an increasing dopant concentration with depth to achieve a linear capacitance/voltage response characteristic.

Because Sze does not add anything to Stover to suggest the subject matter of claims 3 and 5-7, these claims are non-obvious and therefore should be patentable. Additionally, claims 3 and 5-7 should be patentable as depending from amended claim 1 which is now believed to be patentable.

Conclusion

The pending claims are believed to define patentable subject matter which is not described or suggested by Stover or Sze. Allowance of the pending claims 1, 3 and 5-7 is respectfully requested.

It is respectfully requested that the Examiner call the undersigned to describe the status of this application after considering this Amendment and Response. Moreover, the Examiner is requested to telephone the undersigned to resolve any further issues which are seen as inhibiting the allowance of the claims.

Respectfully submitted,

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